Water movement and turgor in wilting plants.—PRINGSHEIM has undertaken some important work which may be reasonably expected finally to bring us nearer an understanding of the movement of water in plants. The paper is quite long as compared with the experimental data, though this is perhaps justified by the pioneer nature of the investigation.[11] It seems to be quite universal in cases of wilting that the younger parts are favored in water supply at the expense of the older organs. Investigation proves that there is an actual passage of water from the basal to the apical portions, and that the latter transpire at a relatively greater rate. This movement is associated with a difference in osmotic potential between the base and the apex. The more rapid transpiration of the apical parts increases the concentration of the sap in that region, which is relieved by a movement of water to that locality. This gradient of sap-density from base to apex is correlated with a corresponding turgor gradient. Such facts lead the author to take issue with WIESNER, who has regarded a movement of water as the determining factor in the emergence of adventitious organs. In such cases the author finds an increase in the concentration of the sap in those tissues from which the new parts emerge, which of course necessitates a movement of water in that direction. The difference of osmotic potential in a wilting shoot is, qualitatively, initially present and in no case did it appear where not initially present. While the law of mass action undoubtedly operates to regulate the turgor, the author regards this an inadequate explanation for the relatively high constancy of turgor found.—RAYMOND H. POND.

Growth and respiration during winter.—SIMON has studied what he calls the separate growth functions (shooting of buds, elongation of roots, callus-formation, secondary thickening, etc.) and respiration during the period of winter rest.[12] In some cases the suspended activity is autogenous, that is, not necessitated by external conditions. This is true of buds which rest only one season. Those which rest for several seasons do so because the external conditions are not suitable for their growth. If at any time during their long rest the proper conditions are supplied, growth activity is at once resumed. Such a period of inactivity is therefore called aitiogenous. The rest of a majority of the meristematic tissues is autogenous. The reduced elongation of the root is partially autogenous, but to a greater extent aitiogenous, while callus-formation is entirely the latter. Respiration does not show a period of rest corresponding to that of the growth functions. Under favorable conditions it may be relatively intense. If the temperature be raised to about 22° C. the intensity of respiration is found at any time during the rest period to be only about 25 per cent. less than at the time of its maximum, which is during the active season of the cambium. Res-

[11] PRINGSHEIM, ERNEST, Wasserbewegung und Turgorregulation in welkenden Pflanzen. Jahrb. Wiss. Bot. **43**:89–144. 1906.

[12] SIMON, SIEGFRIED, Untersuchungen über das Verhalten einiger Wachstumsfunktionen sowie der Atmungstätigkeit der Laubhölzer während der Ruheperiode. Jahrb. Wiss. Bot. **43**:1–48. 1906.

piration reaches its minimum just before the cambium resumes its activity. The paper includes a rather extended inspection of the literature.—RAYMOND H. POND.

Ecology of woodland plants.—WOODHEAD[13] has investigated the woodland plants near Huddersfield, England, and has made an important addition to the ecological literature that is rapidly developing in Great Britain. The subject is still new enough, however, for the author to preface his paper by a brief account of the study of ecology in Britain. The first section of the paper is physiographic, dealing with the woodland vegetation maps of the various areas under consideration. The second section is anatomical, discussing the effect of environment on structure. Under the head of dominant species, there are described the leaf, petiole, and rhizome of *Pteris aquilina;* the leaf, abscis-layer, and elongated bulbs of *Scilla festalis;* and the leaves of *Deschampsia flexuosa*, *Holcus mollis*, and *Vaccinium Myrtillus*. Under the head of secondary species, the leaves of *Heracleum Sphondylium*, *Lamium Galeobdolon*, and *Mercurialis perennis* are described. The vegetation of the Huddersfield district is naturally divided into three parallel zones: (1) the moss moor (1700–1000 feet altitude), the most exposed zone, dominated by *Eriophorum vaginatum* or on drier ridges by *Vaccinium Myrtillus;* (2) the millstone-grit plateau (1000–500 feet), with oak as the dominant tree, associated with birch and pine; (3) the Coal-measure area (500–200 feet), with deep and well-watered humus soil.—J. M. C.

Phycophaein.—TSWETT finds[14] that phycophaein does not exist as such in the living body of the brown algae. He does find, however, that a colorless chromogen, soluble in water but insoluble in alcohol, is present. An extract made with distilled water contains this chromogen, but owing to its neutral reaction the solution becomes colored very slowly. Extraction with an alkaline solvent, such as ordinary tap water, gives a yellow solution, rapidly becoming brown by oxidation. Decoloration occurs when the reaction is made acid. Extracts of the thallus with 50 to 80 per cent. alcohol remain colorless. This work, done in REINKE'S laboratory, sustains his hypothesis of the *post-mortem* origin of phycophaein and refutes the generally accepted notion that it is a genuine pigment of the chromatophore. The remainder of the paper outlines the author's method for isolating the several pigments present in the chromatophore. The following are soluble in petroleum ether containing 10 per cent. alcohol; carotin, chlorophyllin α, fucoxanthin, and fucoxanthophyl. Chlorophyllin γ is not soluble in this reagent, but is soluble in alcohol and ether. The natural color of the brown algae results from a mixture of these pigments in the chromatophore.—RAYMOND H. POND.

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[13] WOODHEAD, T. W., Ecology of woodland plants in the neighborhood of Huddersfield. Jour. Linn. Soc. Bot. **37**: 333–406. *figs. 70.* 1906.

[14] TSWETT, M., Zur Kenntnis der Phaeophyceenfarbstoffe. Ber. Deutsch. Bot. Gesells. **24**: 235–244. 1906.